

**LISTING OF THE CLAIMS**

1-9. (Cancelled)

10. (Previously Presented) A variable beam hop cycle beam laydown comprising:

first cells supported by a first beam hop cycle;

second cells supported by a second beam hop cycle different from the first beam hop cycle; and

transition cells supported by a transition beam hop cycle for transitioning between the first beam hop cycle and the second beam hop cycle;

wherein each beam hop cycle defines how the downlink energy of one beam is time-shared between at least two cells and wherein each of the hop cycles defines a schedule for transmitting beam energy to at least two cells in a sequential and non-simultaneous manner;

wherein the first cells comprise a first beam-hopped pair of cells, the second cells comprise a second beam-hopped pair of cells, and the transition cells comprise a third beam-hopped pair of cells;

wherein the first beam hop cycle is a 50-50 beam hop cycle wherein beam energy is directed to two cells sequentially on a 50-50 duty cycle basis; and

wherein the second beam hop cycle is a 75-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 75-25 duty cycle basis, and wherein the transition beam hop cycle is a 50-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 50-25 duty cycle basis and is powered off for a remaining 25% of the duty cycle.

11. (Previously Presented) The laydown of claim 10, wherein the 50-25 beam hop cycle directs downlink beam energy to a first transition cell 50 percent of a time period, downlink beam energy to a second transition cell 25 percent of the time period, and a power gated downlink beam 25 percent of the time period.

12-21. (Cancelled)

22. (Previously Presented) Apparatus for generating a variable hop cycle beam laydown, the apparatus comprising:

- a waveform generator producing a first downlink beam, second downlink beam, and a transition downlink beam;

- at least one switch directing the first downlink beam between first feed paths to first cells, directing the second downlink beam between second feed paths to second cells, and directing the transition downlink beam between third feed paths to transition cells;

- at least one feed path selection input coupled to the at least one switch; and a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch according to a first beam hop cycle, a second beam hop cycle different from the first beam hop cycle, and a transition beam hop cycle;

- wherein each beam hop cycle defines how one downlink beam is time-shared between at least two cells and wherein operation of the at least one switch ensures that each downlink beam is directed to at least two cells in a sequential and non-simultaneous manner;

- wherein the first beam hop cycle directs additional bandwidth to one of the first cells to meet bandwidth need;

- wherein the first beam hop cycle is a 75-25 beam hop cycle in which beam energy is divided temporally between two cells on a 75-25 duty cycle basis; and

- wherein the second beam hop cycle is a 50-50 beam hop cycle in which beam energy is divided temporally between two cells on a 50-50 duty cycle basis, and wherein the transition beam hop cycle is a 50-25 beam hop cycle in which beam energy is directed to two cells sequentially on a 50-25 duty cycle basis and is powered off for a remaining 25% of the duty cycle.

23-25. (Cancelled)

26. (Currently Amended) A system for generating a variable hop cycle beam laydown comprising:

first cells supported by a first beam hop cycle associated with a first downlink beam;  
second cells supported by a second beam hop cycle associated with a second downlink beam, the second beam hop cycle being different than the first beam hop cycle; and

transition cells supported by a transition beam hop cycle ~~for transitioning between the first hop cycle and the second hop cycle~~,

wherein said transition beam hop cycle comprises transition downlink beam energy transmitted to [[in]] a first transition cell a first percent of a time period, the transition downlink beam energy transmitted to [[in]] a second transition cell a second percent of the time period, and a power gated downlink beam associated with at least one of the first transition cell and the second transition cell for a remaining percent of the time period, such that the first downlink beam is provided to one of the first cells that is adjacent to the first transition cell during one of the second percent of the time period and the remaining percent of the time period, and such that the second downlink beam is provided to one of the second cells that is adjacent to the second transition cell during one of the first percent of the time period and the remaining percent of the time period.

27. (Currently Amended) Apparatus for generating a variable hop cycle beam laydown, the apparatus comprising:

a waveform generator producing a first downlink beam, second downlink beam, and a transition downlink beam;

at least one switch directing the first downlink beam between first feed paths to first cells, directing the second downlink beam between second feed paths to second cells, and directing the transition downlink beam between third feed paths to transition cells;

at least one feed path selection input coupled to the at least one switch;

a memory for storing downlink beam type definitions that direct the feed path selection input to control the switch according to a first beam hop cycle, a second beam hop cycle different than the first beam hop cycle, and a transition beam hop cycle,

wherein the transition beam hop cycle specifies transmission of downlink beam energy of the transition downlink beam to [[in]] a first transition cell a first percent of the time period, specifies the downlink beam energy of the transition downlink beam to [[in]] a second transition cell a second percent of the time period, and specifies a power gated downlink transition beam associated with at least one of the first transition cell and the second transition cell a remaining percent of the time period, such that the first downlink beam is provided to one of the first cells that is adjacent to the first transition cell during one of the second percent of the time period and the remaining percent of the time period, and such that the second downlink beam is provided to one of the second cells that is adjacent to the second transition cell during one of the first percent of the time period and the remaining percent of the time period; and

a power gating circuit coupled to the waveform generator for gating power in the transition downlink beam.

28. (Currently Amended) A method for providing a variable beam hop cycle beam laydown, the method comprising:

transmitting first downlink beam energy for first cells according to a first beam hop cycle;

transmitting second downlink beam energy for second cells according to a second beam hop cycle different from the first beam hop cycle; and

transmitting transition downlink beam energy for transition cells according to a transition beam hop cycle ~~for transitioning between the first beam hop cycle and the second beam hop cycle~~, the transition beam hop cycle comprises transition downlink beam energy transmitted to a first transition cell a first percent of a time period, the transition downlink beam energy transmitted to a second transition cell a second percent of the time period, and a power gated

downlink beam associated with at least one of the first transition cell and the second transition cell for a remaining percent of the time period;

wherein each of the first beam hop cycle, the second beam hop cycle, and the transition beam hop cycle define defines how the respective downlink beam energy of one a given beam is time shared between at least two cells of the respective first cells, second cells, and transition cells, such that a first downlink beam is provided to one of the first cells that is adjacent to a first transition cell during one of the second percent of the time period and the remaining percent of the time period, and such that the second downlink beam is provided to one of the second cells that is adjacent to the second transition cell during one of the first percent of the time period and the remaining percent of the time period.